GAS JOURNAL

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A WEEK TO REMEMBER

THE third week of this month proved one of the most memorable in the annals of the gas industry. First, of course, was the annual meeting of the Institution of Gas Engineers, and we think that our Institution Number which came off the press on June 22 did justice to a compressed, nevertheless highly successful, meeting interspersed with no social event but fittingly concluded by the President's Reception at the Connaught Rooms. The first of the Institution's gatherings to take place in the nationalised régime, it was only natural that the possible and probable percussions of nationalisation should constitute recurrent theme of thought and discussion throughout the meeting, not only during formal session but in the full—and notably free—information conversations. The 1949 Institution compacted meeting had no loose ends, and the tenor of addresses and papers was satisfying. Institution membership stands higher than ever, and so does its status. Its essentiality and its increased tasks in the new era of State ownership were fully emphasised. There can be no doubt of the measure of support which will be given to the activities of the senior professional body of the gas industry under nationalisation. Assurances to this effect came from all sides and from the highest level ; and we never anticipated that this would be otherwise. Then, from the point of view of the individual member of the industry—and, as always, it is on the sum of individual effort that the strength of the industry will depend, and not on any political doctrine—the address of Mr. Sylvester (we almost wrote 'Sir Edgar') was one of great encouragement, and we cast no doubt on its sincerity. Decentralisation was the aim in the framing of the Gas Bill, and decentralisation is the policy which is being put into practice. Rightly the man on the spot is being given, and will have to shoulder, responsibility, and will be expected to act, within general policy, on his own initiative. The gas industry has been built upon individual enterprise ; without such enterprise its strength will be sapped and its foundations will distintegrate. But the new structure of the industry —and this is all-important—' is being built from the ground upwards instead of from the top downwards ; and this is always the most efficient and satisfactory form of building, whatever the edifice.' We quote these few words from Mr. Sylvester's address.

And how pleasant it was for Mr. Edward Crowther to welcome to the Institution meeting so many distinguished visitors and delegates from overseas ; how appropriate it was that the President of the American Gas Association, Mr. Robert W. Hendee, accompanied by our old friend, Major Alexander Forward, who for many years was managing director of the Association, should not only be present in person but should deliver a paper on a topic of liveliest current interest—the problems encountered in the endeavour to meet peak loads which continue to assume greater proportions and present greater difficulties. Appropriate, too, that the one British paper at the meeting should be a penetrating analysis of some of the economic problems confronting the industry today. We congratulate the author, Mr. D. G. Rose, on a valuable contribution. Addresses, papers, and discussions were given in full in our Institution Number of June 22.

The meeting of the Institution was followed immediately by the first Conference to be held in Great Britain of the International Gas Union, which conference, in divided, simultaneous session, occupied the remainder of the week. Our next issue, that of July 6, will be a further 'special' covering comprehensively the proceedings and will constitute an epitome of the world gas industry today, presenting in both word and picture a most valuable record. Exclusive abstract translations from the French of the many papers contributed to the conference will be by our own Correspondent, and, as with the Institution Number, the issue will be enlivened and brightened by pictures taken by our staff photographer. All the discussions will be given in full. The meeting, attended by delegates from eleven countries, was voted a triumph of organisation ; the conference as a whole, business sessions and social events, from start to finish proceeded swiftly and smoothly under the genial Presidency of Colonel C. M. Croft, who, at the close of the conference, handed over the reins of office to M. Marcel A. J. Brabant, whose active participation in the affairs of the Belgian Gas Association are well known to many of our readers. He was appointed Deputy Secretary of the Association in 1925, General Secretary in 1940, and elected Vice-President in 1945. He became President in 1948. In his new office as President of the International Gas Union M. Brabant has our best wishes.

We headed this very general note 'A Week to Remember.' It was indeed a memorable, a profitable, and incidentally a fatiguing week. We hope that our special issue of July 6 will act as reminder to our overseas subscribers of a happy and useful time spent in this country and that the Institution and the Conference Numbers of the *Journal* will jointly prove a technical record of readability and reliability for future reference on very many occasions.

TIMELY STOCKTAKING

RECENT changes in the gas industry present opportunities for new thought and research, leading to further possibilities for improving the service which the industry can render. With the three main fuel services united under common ownership, a favourable opportunity is presented for closer co-ordination and understanding of fuel utilisation problems by which the most economic fields of application of each service may be more clearly recognised and developed. In the past, the fuel industries have expanded and progressed as a result of their struggle for commercial supremacy, promoted by healthy competition. While this has led to rapid advancement of technical and commercial efficiency it may have resulted in some encroachment and overlapping in certain fields where the fundamental economics of one or other of the services are less favourable and where continued development in that field would be likely to impair the value of the service as a whole. Now is the time to take stock of the position in the gas industry, to consider the relative overall efficiency of the gas-making process with that of electric power generation, and to relate these to the thermal and economic efficiencies of the main processes involved and the principal spheres of utilisation. Of significance also are the load characteristics, production requirements, and operating conditions of the gas and electricity industries, for these have an important influence on the overall economics of the services which each can provide.

It was to this task that Mr. L. J. Clark applied himself in his Presidential Address to the London and Southern Junior Gas Association on June 10. Since 1947 the London Juniors have followed the practice of the Institution of Gas Engineers in reserving the Presidential Address for the end, instead of the start, of the President's year—a practice which on this occasion gave Mr. Clark an exceptional opportunity to take stock of an industry which had already had six weeks' experience of nationalisation. In a masterly review of the economics of the sister industries he pointed to the strange fact that in such a mature and highly developed industry there is still no single system of carbonisation which has been generally accepted as the most generally superior; every system, indeed, is capable of further technical development, a few aspects of which were indicated. The economics of any manufacturing process are affected considerably by the load factor of the demand, the influence of the load factor being considerably greater in electricity than in gas. Turning to distribution, Mr. Clark showed that in the case of electricity the distribution charges amount to about 40% of the consumer cost, most of which is represented by fixed capital charges, whereas in the case of gas the capital costs are relatively lower and the charges so incurred usually represent less than 20% of the cost to the consumer. He presented some original thoughts on the economics of long distance gas transmission—a matter likely to become of increasing interest now that the industry is administered by 12 area Boards, all anxious to eliminate uneconomic manufacturing units—and reached the general conclusion that the transmission of small quantities of less than 1 mill. cu.ft. per day is only justified for short distances of five to 15 miles, but that larger quantities ranging between five and 10 mill. cu.ft. per day may be justified for distances up to about 30 miles to the north of London and 60 miles to the south.

Mr. Clark concluded that with the rising cost of coal the relative overall thermal efficiencies of gas and electricity will assume greater importance, and the economics of supplying different types of load will need careful examination so that a rational tariff policy can be evolved. He felt that each type or group of consumer should bear the full costs associated with the character of the load imposed and that the advantages of diversity between the different groups should be shared equally by all. In this way a disproportionate development of any type of load would not seriously affect the overall economics of the supply. Long-established tradition precluded the formal discussion of the Presidential Address, but there was unanimous agreement that it provided a wealth of material for informal conversation. As the President-Elect remarked, it was worthy of the high reputation of its author.

DEFINITION OF POLICY

An interesting idea is being put into practice by the Institute of Industrial Management, Melbourne. Aiming to arrive at a comprehensive picture of the policies being adopted by various industrial groups in Australia, the Institute invited organisations within the various industries to set out in outline the working policy they have adopted or intend to adopt. Among such requests was one to the Gas Supply Company, Ltd., and Mr. R. A. Schuchard, Chairman and Managing Director of the Company, who visited England for the International Gas Conference, showed us the memorandum prepared in answer to the Institute's enquiry. It is a document setting out within small compass the objects of the Company and the means of achieving these objects in the interests alike of the customer, the employee, and the shareholder. In regard to personnel, among the tenets held is that promotion of existing personnel must be on merit only; no new man should be employed if an existing member is up to the work. 'Refresher' meetings should be held regularly, and conferences of branch managers should take place periodically to exchange experiences; also, branch managers should keep in touch with engineers outside the Company. An over-riding consideration is that the Company's duty to its customers does not cease until gas is doing properly the job it is designed to do. There is insistence on the need for giving better and still better service to the consumer; and this implies not only an adequately trained staff but a staff alert to keep *au fait* with current developments and needs.

THE FUTURE OF THE CIRCLES

The lifeblood of the Gas Industry flows through the veins of its Institution and the many Associations, both senior and junior, which ensure the free exchange of information and opinion, while drawing tight the threads of friendship and collaboration. The value of these technical, educational, and social organisations applies no less to the Gas Salesmen's Circles, whose well-established structure is now threatened by the possibility of a drastic change. It must be remembered that the Circles, as constituted at present, while second to none in enthusiasm and ambition, lack the independence of the District Associations. They draw certain financial assistance from the Gas Council and are dependent, to a very considerable extent, on the active support of the various gas undertakings. With the imminence of nationalisation, the Circles, not unnaturally, felt considerable misgivings. They were threatened by a possible severance of the network built up through the years and, at best, relegation to a 'house Circle' within the area Boards. Their immediate reaction was to seek means of protection, if not defence. Various suggestions were put forward, including the setting up of the Circles with individual membership and the formation of an Association of Gas Salesmen. Neither of these suggestions is new; both have been raised in the past and have been discarded because of impracticability or lack of support. It is, however, time to consider them afresh in the light of present day needs, but the greatest caution is necessary before embarking upon a step which might, all too easily, upset the delicate balance on which the Circles have been built. Individual membership entails individual subscriptions, a factor which itself is directly opposed to the 'Everybody welcome' policy which has been the Circles' past strength. An Association of the kind envisaged would be based on the formation of an inner clique of men, possessing specific qualifications which would automatically exclude the rank and file salesmen.

At the moment an *ad hoc* Committee, formed as a result of the recent meeting of Chairmen and Secretaries, is examining the claims for these and other methods, and upon their deliberations will be based a recommendation to the Gas Council. The Committee's responsibility is very great, for it may well be that the successful continuance of the Circles lies almost entirely in their hands. The problem is sufficiently individual—and even subtle—to make it difficult to understand by anyone not intimately associated with the Circle movement. We suggest, there-

fore, that the Gas Council, and through it the area boards, would do well to adopt the Committee's suggestion, whatever they might be, and thus make it clear that they will not attempt to alter the Circles' constitution until the recommendations are forthcoming. The certain acceleration of competition behoves the industry to puts its selling house in the best possible order, and in this the Circles must play a major part. However the Circles may be ultimately arranged to enable the best use to be made of their services, new groups must be formed to serve those areas insufficiently provided for. This is a task which might well occupy the immediate thoughts of the *ad hoc* Committee, together with the formation of a national organising committee. Both these matters are of considerable urgency and might well receive consideration before the more dubious claims of an Association. Their watchword should be extreme caution and the determination to place the Circles on a solid foundation of uniform thought from which adequate respected by the Council and that every assistance will be secure in the knowledge that their views and work will be respected by teh Council and that every assistance will be forthcoming to make the Gas Salesmen's Circles a reasonably free organisation, allowing untrammelled discussion, and not a puppet organisation for dispensing managerially sponsored pep-talks.

THE COST OF COAL

The annual report of the National Coal Board for 1948, published last week, shows that the financial year ended with a surplus of £1,642,000, compared with a deficit of £23 mill. in 1947, the first year of public ownership. This represents a profit over the year of 1s. 7.9d. per ton, compared with a loss of 1s. a ton in 1947. Output of deep-mined coal increased by over 100 mill. tons in 1948, but fell short of the target set. Manpower rose by 8,000, but the number of men on the colliery books at the end of the year was 23,700 below the 750,000 aimed at by the Board. The report clearly indicates that the industry would not have paid its way last year if it had not been for the extra proceeds obtained from coal exported at prices in excess of those charged for inland sales. The average cost of producing a ton of coal in 1948 was 4s. 4d. more than in 1947, attributable to the introduction of the five-day week and an overall increase in the wages of lower paid workers. Wage costs in fact rose by 2s. 9d. per ton, while the cost of materials and power increased by 1s. per ton. In spite of the Board's declared policy as an employer 'to secure a contented industry'—and few would deny the value of the reforms introduced to secure this objective—there were 1,528 unofficial strikes during the year, involving 190,000 men and a loss of 1 mill. tons of coal. This was a reduction of 590,000 tons over 1947, but the loss is still regarded by the Board as serious, and the report asserts that in view of the present conciliation schemes 'strikes, go-slow and ca'canny are as unnecessary as they are wasteful.' Other, more encouraging, features of the report are that more coalface machinery has been installed, Meco-Moore cutters in particular providing some 800,000 tons more than they did in 1947; that absenteeism fell from 12½% to 11½% in 1948 for all workers, and from approximately 155 to 145 for face workers; and that output per man-shift rose from 1.07 ton to 1.11 ton, exceeding in the last month of the year the 1938 figure of 1.14. But when due recognition has been given to these advances, it would be unwise to conclude that, since the Board has converted a deficit into a small profit, the results are good.

STILL TOO DEAR

The blunt truth is that the cost of coal is still too high. The cost of production in 1938 was 16s. per ton; today that figure has been trebled. The rise in price both during and after the war has been absolutely incompatible with the national need for a lowering of industrial costs. Not least affected by this situation is the gas industry, and it is an ironical fact that the inevitable rise in the price of gas has given a limited but far from negligible stimulus to the more uneconomic burning of raw coal. There are, indeed, all the makings of a vicious circle. Some comfort may, however, be derived from that part of the report which deals with current trends of cost; the Board says that the rising curve became flatter towards the end of the year, and, more important, that in the first quarter of this year costs were further reduced—and, it is hinted, fairly sharply reduced. Thus it would appear that the policy of ceasing to invest money in improvements for the miners to win their initial goodwill, adopted by the Board in 1948, is by now showing a return. The question now to be asked is whether this progress will be maintained and costs more sharply reduced throughout the rest of the year. It will become increasingly difficult to continue the stop to wage increases for the miners, and to convince them that the Board must improve upon its profit in 1949 and that price cuts must come before wage advances. Here, it must also be recorded that the high hopes expressed by the Board last year of introducing a new and rational price structure have not been fulfilled. 'After going more fully into the matter,' it has come to the conclusion that 'this cannot be done all at once or done soon.' In the meantime changes in the prices of many coals were made in the summer of last year. The prices of poorer quality coals were reduced by amounts ranging up to 15s. a ton, and prices of better quality coals increased by amounts varying up to 3s. a ton. Domestic prices remained unaffected, but gas undertakings had to meet the increased cost. Work has begun on a further series of adjustments to be introduced this year, representing the second instalment of the new price structure. The Board hopes that it will be sufficiently comprehensive to remain in force until the final changes can be determined. It remains to be seen whether future price adjustments will bring even greater economic burdens for gas undertakings. Redolent of the curate's egg, the report offers more hope than its predecessor, but that has yet to be justified by concrete results.

Personal

Mr. ROBERT WILLIAM FOOT, O.B.E., M.C., a Managing Director of Powell Duffryn, has been appointed an additional Deputy Chairman of the Company.

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In appreciation of his past services since 1935 as Borough Gas Engineer, the Corporation officials of Burton-on-Trent Town Council recently presented Mr. HAROLD WYNNE with a silver salver inscribed with the names of the donors. The presentation was made by the Borough Treasurer, Mr. A. J. Smith.

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To mark his appointment as General Manager of the Southern Division of the South Western Gas Board, Mr. R. C. TAYLOR, until recently Director, Engineer, and General Manager of the Torquay and Paignton Gas Company, has been presented by the staff with an album containing their signatures, together with a cheque with which they hope he will buy a piece of antique furniture. The presentation was made by Mr. J. W. Denton, Torquay Sub-Divisional Manager, at a gathering attended by 150 members, in the Demonstration Theatre of the Torquay Chief

Mr. R. C. Taylor (left) receiving the presentation from Mr. J. W. Denton.

Offices. Accompanying Mr. Denton on the platform was Mr. G. H. L. Easterbrook, a member of the South Western Gas Board, whose family have been connected with the Torquay and Paignton Gas Company for two decades. Mr. Easterbrook spoke in high praise of Mr. Taylor's achievements and the great regard in which he was held by all members of the community. Mr. W. H. Brooks, Unit Controller under the South Western Gas Board and for many years Branch Manager at Paignton, said the Staff owed Mr. Taylor more than could be expressed, and felt instinctively that they wished to offer him some token of their admiration, gratitude and affection.

Obituary

The death has occurred of Mr. LEIGHTON I. AUSTIN, Managing Director of the Steel Equipment Co., Ltd., West Bromwich.

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The death has occurred, at the age of 69, of Mr. WALTER A. WILSON, Chairman and Managing Director of W. and H. Wilson, Ltd. Mr. Wilson was associated with Wilsons and Mathiesons, Ltd., of Leeds, for 40 years, of which firm he became a Director. In 1936, with his brother, he started the firm of W. and H. Wilson, Ltd., manufacturing the 'Elton' gas wash-boiler, hotplate, and other products.

Appointments

Gas Council

Mr. REGINALD J. GREGG has been appointed Publicity Manager of the Gas Council. Mr. Gregg was Sales and Publicity Manager of Ascot Gas Water Heaters, Ltd., for many years. Recently he took over the group sales and publicity management of FA-Neat Gas Appliances, Ltd., Parnall Wringlet, and Compoflex Gas Tubing, also acting as publicity consultant to Ascot's associated companies—Radiant Heating, Ltd., and Parnall (Yate), Ltd. The Ascot Board has agreed to release him to take over his new responsibilities as from Sept. 1. Mr. Gregg has been employed in the gas appliance industry for over 16 years and has had wide and varied experience in all fields of publicity and particularly in those media which he will be called upon to handle in his new post. The Press and editorial services of the Gas Council will continue to be handled by Mr. Reginald S. Hinder, with whom Mr. Gregg will work in close co-operation.

Mr. R. J. Gregg

Mr. R. S. Hinder

Mr. REGINALD S. HINDER, British Gas Council's Press Officer since November, 1946, has been appointed in a similar capacity with the Gas Council. He will be responsible for the Press information and editorial services of the Council and will be directly answerable to the Council. Mr. Hinder will work in co-operation with the new Publicity Manager so far as exhibitions, films, and other publicity projects are concerned. No increase of the Gas Council's Press staff is envisaged at present. Deputy Press Officers are Mr. C. L. ELLIOTT and Miss DOROTHY POLINI. Mr. Hinder joined the gas industry after 22 years' Fleet Street journalistic experience. He is at present Hon. Secretary of the Press Golfing Society.

South Eastern Gas Board

Additional appointments are announced by the South Eastern Gas Board as follows :—

Chief Supply Officer: F. WHITE, B.SC., M.I.C.E. Mr. White will be responsible for stores and purchasing, transport, and repair of meters and stoves. Until further arrangements are made, he will also retain his existing responsibilities as Distributing Engineer of the Metropolitan Division of the Board.

Stores Manager: A. J. PRESTAGE, B.SC. Mr. Prestage will be the senior officer on stores and purchasing, but will give special attention to the organisation throughout the area.

Stores Buyer: W. H. NAPPER.

Chief Physicist: G. H. FUIDGE.

Chief Chemist: H. STANIER.

All those mentioned above will work from 709, Old Kent Road, S.E.15.

Production Control Officer: D. L. WOODMAN.

Assistant Production Control Officer: W. T. FARRANT.

The following divisional appointments have also been made :—

Metropolitan Division: Accountant, R. N. BARNETT; Distributing Engineer, F. WHITE; Service Manager (acting), L. F. RANDALL.

West Surrey Division: Chemist, W. J. JORDAN, B.SC.; Distributing Engineer, W. T. HOUSTON.

East Surrey Division: Distributing Engineer, D. R. RICHBELL. Mr. C. T. PRICE has been appointed to succeed Mr. Webber as Engineer when the latter takes up his appointment as Engineer of the Sussex Division at a future date.

Kent Suburban Division: Distributing Engineer, F. T. BUIST.

Kent County Division: Chemist, P. C. BISHOP; Distributing Engineer, W. A. BARNETT.

Sussex Division: Chemist, J. T. VERYARD; Administrative and Personnel Officer, S. R. COLLINS; Distributing Engineer, W. M. PATERSON.

RISE OF THE BRITISH GAS INDUSTRY

Whether by design or accident, it is appropriate that the last publication of the British Gas Council prior to nationalisation of the industry should be a chronicle of the birth and early history of the British gas industry. *The Rise of the Gas Industry in Britain*,* by Dean Chandler and A. Douglas Lacey, is a historical record of the origins of the industry at the end of the 18th and the beginning of the 19th centuries, and of its progress during the first 50 years of its long record of service. The story opens with a glimpse of those momentous years in which the new illuminant endured its birth pangs, when Britain was changing, almost daily, from its old established pattern of agriculture and domestic industry to a new, and now familiar, mode of living, that of large-scale industrial production.

The social and scientific background in those days of war with Napoleon was characterised by a low standard of scientific knowledge, reflected in a society where the stage coach and oil lamp reigned supreme. This was the environment when gas first appeared as a practical and improved method of lighting streets, public buildings, and houses. From that point the reader is introduced to the pioneers of gas lighting, passing briefly via Shirley (1659), Clayton (1684), Hales (1727), Lowther (1733), Dixon (1779), and others down to William Murdoch, born 1754, and generally accepted as the inventor of gas lighting. Individual chapters are devoted to the life, character, and work of Murdoch and Winsor, Clegg, Malam, and Accum, and other contemporary scientists who contributed to the rapid development of the industry in its infancy. These pages are full of colour and bring to life the characters of the men described, who differ, in the words of the preface to the book, 'as widely as the conscientious, modest Murdoch and the mercurial, impulsive Winsor.' They amply fulfil the desire of the authors to satisfy a need which was felt by Dr. Braunholtz when he said that a great service could be rendered to the young gas engineer 'if the human history of the gas industry were to be written by one of its older members with knowledge of the pioneers of the past—a series of biographical sketches of the great men to whose vision and achievements the industry owes its continued development and success.'

The authors themselves have had a wide experience of the industry and bear names which have long been associated with and honoured by its members. The book is the product of many years' research, and as such constitutes an invaluable contribution to the field of social history. It concludes with two chapters on early processes of purification and descriptions of gas manufacture, with a final summary of the half century of progress. The work is excellently, one might almost say lavishly, produced, with coloured plates, more than 50 illustrations of original portraits, plans and diagrams; the text is amply documented, and a series of appendices provide a complete record of contemporary comment, letters, and reports. This is indeed a book which should find a place in the bookshelf not only of the young student but also of all those who have the welfare of the industry at heart.

* The Rise of the British Gas Industry, Dean Chandler and A. Douglas Lacey. Published by the British Gas Council, price 15s. Available from the Gas Council, Gas Industry House, 1, Grosvenor Place, S.W.1.

Diary

June 30.—**Gas Council, Coke Department:** Coke Committee, Gas Industry House, 11 a.m.

July 1.—**Manchester District Association of Gas Engineers:** President's Day, Blackburn.

July 13.—**National Benzole Association:** Annual Meeting, Wellington House, S.W.1, 3.45 p.m.

July 27.—**British Standards Institution:** Annual General Meeting, 24, Victoria Street, S.W.1, 3 p.m.

FUTURE OF THE JUNIOR ASSOCIATIONS

LONDON AND SOUTHERN ANNUAL MEETING

THE 47th Annual Meeting of the London and Southern Junior Gas Association was held at Gas Industry House on June 10, under the Presidency of Mr. L. J. Clark, B.E.M., M.SC.

Mr. **J. E. Gray,** Hon Secretary, presented the Council's report, recording nine very successful meetings, with an average attendance of 100 and a maximum of 140, and 11 visits to works. Outstanding events had been the summer visit to Hatfield as the guests of the Tottenham and District Gas Company, and the reception and dance, attended by 275 members and guests. Membership had increased by 20 to a total of 625. Congratulations were extended to Mr. A. J. S. Wiseman on winning the Milbourne Prize for his paper on 'Dust Problems in Gasworks Practice,' and to Mr. J. A. Williams on gaining both the S.B.G.I. Silver Medal and the Institution of Gas Engineers' Bronze Medal for his paper on 'Laying a Gas Main in the Sea.'

The **President** said that the question of the future of the Junior Associations had been considered during the year. The impact of nationalisation had prompted some of the Senior Associations to seek closer affiliation with the Institution of Gas Engineers by becoming District Sections, and in some quarters it had been suggested that the Juniors might fit into the framework by becoming Student Sections. The Juniors had built up a tradition in the industry and comprised a very wide cross-section of its personnel, and they felt that they should not too easily relinquish their functions and duties. The matter had been referred to the British Junior Gas Associations Joint Council and it was intended that a memorandum should be prepared setting out the history, functions, and activities of the Junior Associations, with conditions of membership. There had been very cordial meetings with the Seniors and with the Institution, and the Joint Council had been invited to send a delegation to meet the President, Vice-Presidents, and Secretary of the Institution so that an informal discussion on the future could be arranged. The result of that meeting would be the subject of a report.

Mr. **D. G. Winslow,** Hon. Treasurer, presented the financial statement, and on his proposition the Association agreed to make a donation of 10 guineas to the Benevolent Fund of the Institution of Gas Engineers.

The New Officers

On the nomination of the Council the following officers were elected for the 1949-50 session: *President,* A. H. Savill (Wandsworth); *Senior Vice-President,* T. V. Garrud (North Thames); *Junior Vice-President,* J. D. C. Woodall (Maidstone); *Hon. Treasurer,* D. G. Winslow (British Railways); *Hon. Secretary,* J. E. Gray (North Thames); *Assistant Hon. Secretary,* E. P. Salmon (North Thames).

The **President** said that Mr. W. F. Pritchard (Tottenham), who carried out the duties of Assistant Secretary so successfully for some years, was now Secretary of the Joint Council and was not able to continue to hold both offices. In recognition of his past services he proposed that a testimonial be presented to him. This was warmly supported.

The **Secretary** announced that in accordance with the rules, the following would be *ex-officio* members of the new Council: J. H. Dyde, President of the Southern Association of Gas Engineers and Managers; J. M. Webber, Hon. Secretary of the Southern Association; C. A. Deas, and L. J. Clark, the two immediate Past Presidents of the Association.

Mr. G. Wilson Smith and Mr. F. C. Smith were re-elected Auditors, and Messrs. A. H. Savill, T. V. Garrud, R. F. Twist, and J. E. Gray were elected to serve on the District Education Committee of the Institution of Gas Engineers. A ballot for the election of eight members of the Council resulted in the election of the following: A. Bell, G. J. B. Cox, E. W. B. Dunning, W. Johnson, N. R. Junkison, J. B. McKean, W. F. Pritchard, and C. D. Shann.

On the proposition of Mr. **Savill,** seconded by Mr. **Garrud,** the meeting confirmed an alteration of the rules which had been suggested by the Rules Sub-Committee. The following was substituted for the existing Rule 4 (c) 'Associate Members.—Applicants for Associate Membership must be employed by a gas undertaking or in the manufacture or construction of plant or apparatus therefor. Those applicants who are employed by a gas undertaking must either (1) hold the Ordinary Grade Certificate of the Institution of Gas Engineers or a qualification which, in the opinion of the Council, is at least equivalent thereto, or (2) if over 30 years of age, have held for at least three years a technical position of such responsibility as makes him suitable in the opinion of the Council for Associate Membership. The Council may at its discretion request the applicant to submit the names of referees. Those applicants who are employed in the manufacture or construction of plant or apparatus for gas undertakings must hold the Ordinary Grade Certificate of the Institution of Gas Engineers or a qualification which, in the opinion of the Council, is at least equivalent thereto.'

Mr. **F. C. Smith** (North Thames Gas Board) expressed some apprehension as to how the revised rule would operate in the case of men over 30 years of age, but agreed that the revision might be accepted now and if necessary reconsidered in two years' time.

A vote of thanks was accorded to the Technical Press on the proposition of Mr. **C. D. Shann,** seconded by Mr. **J. E. Gray,** Hon. Secretary, response being made by Mr. **A. C. Cross** (*Gas Journal*).

Thanks to the President

Mr. **L. J. Clark** then delivered his Presidential Address, an abridged report of which will be published in a later issue of the *Journal.*

Mr. **A. H. Savill** (President-Elect), proposing a vote of thanks for the address, said Mr. Clark had given a most interesting review of the economics of the gas and electricity supply industries and he could pay him no greater compliment than to say that the address was fully worthy of the deservedly high reputation of its author. He also thanked Mr. Clark for the efforts he had made on behalf of the Association during the past year.

Mr. **T. V. Garrud** (Vice-President), in seconding, described the address as the culmination of a wonderful year's work for the Association, and his only regret was that it could not be discussed.

The **President** briefly replied and said that thanks to the loyal support of the Council and the members he had had an extremely happy time. He then inducted his successor, Mr. Savill, as President, and wished him every success and happiness in the office.

Mr. **Savill,** in taking the chair, said the year marked the beginning of a new era in the history of the Association. They had been much concerned as to the effect that nationalisation was likely to have on them as individuals and as members of the Association. Although in many cases their personal misgivings might now have been allayed the future of the Junior Gas Associations was still a little obscure. There was no doubt in his mind that the need for professional organisations such as theirs was greater now than ever before. The Association had always worked consistently and energetically to promote the development of the great industry which they sought to serve, and he hoped that the change of ownership which took place a short time ago would not be allowed to affect the diversity or status of the Association or its members.

Finally, Mr. Savill invited suggestions for the next session's programme; among the ideas he put forward himself were a short paper evening and a brains trust evening.

LIMERICK NEEDS A COMPLETELY NEW GASWORKS

Evidence that the output of gas at Limerick was only about a quarter to a fifth of what it should be was given when a proposal by Limerick Corporation to raise a loan of £500,000 for the erection of a new gasworks was considered at an enquiry held by the Local Government Inspector, Mr. H. P. Clerkin.

No objection was offered to the Corporation's application.

A conference of experts had been held for the purpose of ascertaining the best method of solving the town's gas problem, and it was agreed that the gasworks were in such a condition as to necessitate the scrapping of the whole plant with the exception of the holder. It was also found that the existing distribution service was totally inadequate.

The conclusion was that a completely new gasworks was needed, and it was recommended that this should be built on a site at Corkranree, which was the property of the Corporation.

Mr. F. K. Thomas, Engineer and Manager, said that there were 12,000 households in the Limerick area of supply, but only about 50% had been connected up. There was tremendous scope for development.

The long-term policy proposed for the gas undertaking was to erect a new gasworks with a production capacity of 2 mill. cu.ft. daily, capable of extension to 3 mill. cu.ft.

It was proposed that the capital sum borrowed be repaid in 20 years. As the whole of the amount borrowed would be expended over a period of five years, a substantial increase in revenue from the sale of gas in the meantime would offset the repayment of interest charges.

TOLERANCES*

By F. M. BIRKS, C.B.E.,

Vice-President of the Institution of Gas Engineers, Deputy Chairman of the North Thames Gas Board

IN thinking of a subject for this talk I have endeavoured to choose one which is appropriate to the training and experience of the junior engineer. Now let us assume that a young man with full academic qualifications has started on his career in industry. The first few years will be full of hard experience, when scientific theory has to be applied and adapted to commercial practice and when considerations of economics, custom, and commercial expediency often override those of pure science. He will probably find that practical engineering is not such an exact science as his theory had led him to suppose. In designing plant, for instance, he will find liberal margins allowed for various contingencies and unpredictable factors. This must not, however, be mistaken for unconsidered guesswork, for experienced engineers develop an ability to weigh up the different factors of any particular problem and assess what tolerances should be allowed to produce results which most satisfactorily meet commercial needs or incur the lowest overall cost.

It is this matter of tolerances that I would like to take as my main theme, and although the strict use of the word is confined mainly to production engineering practice in defining the allowable dimensional limits for machined components, the principles involved have much wider application and I think much can be learned if we examine other engineering problems from this point of view.

It so frequently occurs that after weighing up the evidence relating to a technical problem, a satisfactory conclusion can only be drawn if the tolerances of the variables are fully appreciated, for most conclusions are matters of compromise rather than the result of exact determinations. In such cases an appreciation of the tolerances within which any one factor can be displaced from its optimum value, without materially affecting the issue, is of great value.

An Uncommon Sight

It is uncommon to see a young science graduate who has recently entered the engineering industry, deep in the calculation of some problem to the *n*th degree of accuracy, when the practical data upon which his work is based cannot even be measured to anything like this degree of accuracy. There is also a risk in striving for absolute accuracy that such effort may be wasted, and, even more serious, one's vision may be so narrowed that there may be a tendency not to see the wood for the trees. Large accumulations of figures representing experimental data or process results are often misleading, for the important trends and relationships may be entirely lost in a welter of information.

It is a fact that the whole training of the accountant and, to a lesser degree, the analytical chemist is directed towards absolute accuracy, whereas in the training of an engineer the mind is instructed to appreciate and apply rigid control over inaccuracy —in other words, an appreciation of tolerances. The mechanical engineer comes into contact with this concept early in his training in machining and production methods, where tolerances are given for the dimensional clearances and interference fits of machine parts. Such tolerances may be expressed as plus or minus 1/10th of an inch, down to plus or minus 1/10,000 of an inch, and it is clearly recognised by all competent mechanical engineers that the nearer you approach to absolute accuracy the higher the production costs involved. From the commercial standpoint it is never advantageous to obtain an accuracy of a higher degree than the particular application warrants, because the reduced tolerances will always increase the cost of production, without necessarily increasing the reliability or life of the machine. In many cases, too small a tolerance will reduce reliability and may lead to accelerated wear or deterioration.

Shell Production

A well-known example showing the application of widely differing tolerances is to be found in the machine shop practice of an ordnance factory producing shells. An examination of the dimensions of, say, a 25-pounder shows that very fine limits are used for machining the copper driving band, while the overall length of the projectile may vary within wide limits and may be used as convenient means of trimming the weight to the desired value. The tolerances actually selected and specified for a particular size of shell are those which will incur the lowest manufacturing costs, consistent with ensuring that the product will perform within the required limits of accuracy when subsequently used. In the case of shell production, other considerations such as rate of output may be of predominant importance in time of war, and adjustments are made accordingly.

Many other examples could be cited, but the underlying principles are usually similar.

The quality and properties of engineering materials are found to vary within wide, but known, limits. For example, the steelmaker will show you that it is not worth while specifying the ultimate tensile strength of normal mild steel to a closer accuracy than 28-32 tons per sq. in., for, by so doing, production costs would be increased out of proportion to the advantages that might be gained from the use of a more closely specified material. Similarly, tolerances have now been established for the physical properties of most engineering materials, and in this connection the British Standards Institution have done most valuable work in rationalising the tolerances of quality and physical properties, so that the conditions of manufacture and utilisation can be met in the most economic manner.

Now in what direction can this subject be expanded and applied to some of the particular problems of the gas industry? In the first place, let us consider its application to general production control, for adjusting the gas manufacturing plant to meet the load. It has been found that the gas consumption is related to the average atmospheric temperature and can be predicted thereby, within a margin of plus or minus 3 to 4%. Similarly, by a detailed study of the atmospheric temperature conditions over the last 20 years it has been found that in general they obey the natural laws of chance and probability, so that the incidence and duration of cold weather periods can be predicted within defined limits.

Co-Ordination of Data

By co-ordinating this data it is possible to predetermine the upper and lower limits of gas-making plant capacity that may be required to meet the varying loads throughout the year and this information is of great value in programming repairs and selecting the most economic balance between the proportions of carbonising and carburetted water gas plants to be made available for dealing with each stage of the seasonal load.

Much of this work involves the use of statistical methods in which the principle of tolerances has been fully recognised and the term 'standard deviation' has been established to define the permissible limits of variation.

Let us now turn to everyday works practice, where recorded observations of the operating conditions of gas-making plant, ancillaries, and power plant are used to indicate satisfactory operation. One often finds engine rooms and other plant provided with very elaborate log books in which conditions of pressure, temperature, and flows for steam, gas, or water are carefully recorded at relatively short intervals. Apart from abnormal occurrences, such as plant breakdown, the same, or very similar, readings, are recorded day after day so that the slow fall-off in performance of a steam condenser, for example, as the tubes become fouled, may change the day-to-day results so little that over longish periods a considerable decline may take place before those responsible for the plant have their attention drawn to the matter. If at the head of every page in the log book all the limits of tolerance or allowable variation are recorded, it immediately becomes apparent when actual conditions have reached the permissible limit. In the same way technical data can with advantage be established for quite a number of the observations carried out with the various processes of gas-making.

An alternative method which sometimes offers advantage is to plot the observations in graphical form between lines representing the limiting values. This method not only indicates when the limit has been reached but also the prior rate of approach, so that the time when the corrective measures must be applied can be anticipated.

Check on Quality

Similar methods can be employed for keeping a check on the quality of raw materials or residuals. The chemical and physical properties of coal, coke, oil and so on, may vary appreciably from one sample to another, but limits can be readily established for the salient properties so as to allow practical flexibility, while maintaining an over-all control on the quality.

It may be worth while to establish tolerances for all the routine chemical tests on the gasworks, for very close accuracy is rarely required, and much staff time may be saved by permitting simpli-

* An address to a joint meeting of the Scottish Junior Gas Association (Eastern and Western Districts)

fied or more rapid test methods which will give results of an accuracy which is adequate for process control.

Tolerances find wide application in distribution practice. Apart from the inherent tolerances within the gas flow laws themselves, it must always be remembered that gas mains are never laid to meet the present needs, but rather the future requirements, and these must always be subject to an estimated response of human behaviour, preferences and habits. I do not think you will quarrel with me for saying that the tolerances relating to these human qualities are extremely wide.

An interesting example of misunderstanding in the use of tolerances can be drawn from the sphere of gas utilisation.

For some years prior to the war there was a marked trend on the part of appliance designers progressively to narrow down the limits of gas quality within which appliances would burn satisfactorily. This was, of course, done to gain a slight improvement in appliance efficiency but completely disregarded the fact that this narrowing down faced the works engineer with an ever-growing problem of producing gas efficiently and economically; he was being hampered in his technique of balancing coal gas and carburetted water gas to meet changing market conditions and to deal economically with the peak load. My view is that the limits for gas quality should be as wide as possible consistent with the interests of appliance efficiencies and gas manufacturing economics.

Matching Burner

The best method of adjusting gas appliances on the district, to the mid-point of tolerance range, presents an interesting problem and I am convinced that this can be most satisfactorily achieved by having a small 'matching' burner which can be carried by the fitter and used as a standard for comparing the cone heights of the appliances. If the injector of the test burner has been correctly pre-set to give the proper cone height with a gas quality at the mid-point of the range, and the appliance flame is matched with that of the test burner, the effect of actual variations of district gas quality at the time of testing will be eliminated and the fitter can be assured that the appliance has been correctly set.

I would like particularly to draw your attention to the use of tolerances in costing. For example, let us consider the cost of gas manufacture. This is usually obtained by summarising the various items of expenditure over some recognised period such as the financial year and dividing the total thus obtained by the therms of gas sold, the result being commonly taken as the basic cost per therm of gas made. Such costs are frequently used for estimating future revenue, or even for establishing future tariffs, and all too often insufficient attention is paid to the margins which should be allowed, with the result that the financial estimates may involve serious errors. It must always be remembered that it is never safe to extract a cost from its condition of the past and apply it to the future without making allowance for possible change of conditions. In making comparisons between costs of coal gas and carburetted water gas, for the purpose of determining which gas can be most economically made, consideration must always be given to the influence of changing factors, which will probably affect the comparison of costs in quite different ways. It should always be realised that past costs apply to a particular set of conditions which are hardly ever reproducible in the future, and it may be very misleading to ascribe great accuracy to a future estimate based without qualification on past conditions. It is much safer to examine all the factors and, after allowing a fair tolerance to each, to estimate not only the future cost but the range within which that cost is likely to vary if any of the conditions should change. In this way a clear picture is presented and the action to be taken in the event of any changed conditions can be predetermined.

Costs of Gas Manufacture

The cost of gas manufacture can be divided into those items which are fixed (though not immutable) and those which vary in direct proportion to the therms made. The relative significance of these two groups depends upon the working load factor of the plant and if an actual analysis is made, it is possible to construct a curve showing the variation in the cost of gas manufacture over a wide range of load factors. Such a curve, is, of course, the familiar rectangular hyperbola, which has so many applications in engineering fields, where relationships between fixed and variable factors are involved. It will be appreciated that such a curve cannot be shown throughout the whole of its range, since it extends towards infinity as it approaches zero load factor. Much useful information can be obtained from a study of the steeply rising end of the curve, but all too often it is cut off prematurely because it reaches the limit of the paper or the scale and its significance is thereby lost.

Let us consider the relationship between the overall costs of coal gas and carburetted water gas throughout the whole range of load factor. Assuming the comparison to be made between modern plants it will be appreciated that for high load factors coal gas is cheaper than water gas. As the load factor is reduced, however, the influence of the heavier capital charges on the carbonising plant will cause the two curves to converge and they will cross over at the point where the carburetted water gas is equal in cost to that of coal gas. For lower load factors carburetted water gas actually becomes cheaper than coal gas and is thus most suited for dealing with those increments which augment the peak demand.

At this stage one must allow a tolerance of, say, plus or minus 10% for the actual cross-over point at which the costs of the two gases become equal. This is, of course, determined by the relative price levels of coal, coke, and oil, and the extent to which each one is likely to vary with changing market conditions. The range is naturally fairly wide and it will be found that there is no marked economic advantage of either gas within it. If we pursue the cost comparison down to quite small load factors it will be found that a distinct advantage will accrue from the use of carburetted water gas. An examination of the curves would show that it is most costly to supply the consumer with a very poor load factor, and even if the cheapest form of gas manufacturing plant is employed the provision of such a supply is most uneconomic. Most of you, no doubt, are fully aware of these facts, and you must forgive me for preaching at length about them, but they do serve to show clearly the economics of supplying different types of load and they do help in making comparisons with our sister industry, the British Electricity Authority. To them, the problem of the poor load factor is even more serious, for their capital charges per unit of energy or heat sent out are nearly double those of the gas industry, and they have run into quite serious difficulties by concentrating too much of their attention to the wrong end of the load chart. One so frequently hears the opinion that an improvement of the present load factor would result in a cheaper service to the public, but one never hears the warning note that if additional loads are taken on, of such a character as to worsen the load factor, they will materially increase the cost of the service. Now it is this latter consideration which is of the greatest importance, for a study of the rectangular hyperbola relating cost and load factor will show that for any point on the curve, a 5% decrease of load factor will result in a much greater increment of cost than the reduction which would be obtained from a 5% improvement of load factor. Time and again we find people in an optimistic endeavour to take on more loads in the hope of improving the load factor, but finding that it has actually worsened. For example, let us take the cooking load, which some of our electrical friends are trying so hard to wrest from us. This is a very heavy load, but it has a high consumption peak and a resulting load factor which is much worse than the electrical industry already has. If, therefore, they were to succeed in taking over a substantial part of this load, the cost of electricity would inevitably rise and this would have to be borne by the consumer, but not necessary by those who have caused the price rise. It is more likely to be extracted from the industrial user who has no alternative supply of power and is therefore most likely to pay the price increase demanded.

The Human Factor

Is it practicable, then, to achieve any substantial improvement in the consumer load factors for any of the services such as gas, water, and electricity? I think it must be recognised that as these are public services their load factors must be related to that of the human being. Whether we work, play or sleep, we require warmth during certain periods of the year and heat for cooking and other purposes at certain times of the day. If all these factors could be accurately assessed I think we should find that the natural human load factor lies somewhere between 40 and 60%. Unless we are to impose legislation directing human beings to eat, work and sleep in shifts or relays we cannot ever expect to achieve a load factor much higher than the 40-60% range. The suggestion of legislation is, of course, quite unthinkable, for it would be a sad day if the servant became master of the man.

Now, where have these mental peregrinations led us? It is clear that every aspect of the industry is closely controlled by tolerance and although I have indicated just a few samples, you will no doubt have thought of many more. Nearly all commercial tolerances are influenced by the prosperity of the country as a whole and this factor will exert the greatest single influence in the future.

For the present, never mistake tolerance as a convenient cloak for guesswork. Regard it as a deliberate and rigid means of controlling inaccuracy that requires much experience in its application and understanding. At the same time, it provides an economic expedient of great value, merging all the technical, economic and commercial interests, to ensure success in a public service and to provide the best product consistent with the lowest price.

Always seek to widen the tolerance if this can be done without jeopardising the product, for just as in the sphere of personal relationships tolerance begets broadmindedness and understanding, so in the world of commerce it brings breadth of vision and an ability to assign true values to an ever changing set of circumstances.

STAFF SALARIES IN THE GAS INDUSTRY

NEGOTIATING MACHINERY UNDER NATIONALISATION

THE hope that they would be able to secure for gas staffs similar salary standards and conditions of service to those already secured for staffs in the electricity industry was expressed by Mr. J. E. N. Davis, Chief Organisation Officer, at a meeting of gas staff delegates on the day preceding the opening of the annual conference of the National Association of Local Government Officers at Aberdeen on June 14.

Mr. **P. Ashen** (Birmingham), who presided, said they met in difficult times and they had a period in front of them that was going to be very unsettled. It was his hope that what was negotiated for electricity would be followed up for the gas staffs. He was not satisfied they would be able to get for gas staffs what Nalgo had got for electricity staffs. As nationalisation went on the expense mounted and he was afraid that the services which were nationalised third or fourth were going to suffer.

The Strongest Weapon

Mr. **J. E. N. Davis** said that the strongest weapon in their negotiations with the National Joint Council for Gas Staffs would probably be the standards already negotiated for the sister service of electricity and they would do well if they could persuade the Gas Council to concede what the electricity authorities had conceded. Conditions were not exactly the same. In electricity roughly 60% of the administrative and clerical staffs were transferred from municipal staffs and 40% from company staffs; in gas they had the opposite.

There had been a great tradition in the gas industry, where negotiating machinery had existed in relation to the manual employees, of district negotiating and the fixing of district rates. The attitude of the employers was that they did not want to get far away from past practice in the gas industry and to fix rates here and there instead of the national standards the Association were anxious to secure and which they would do their best to secure. When the National Joint Council for Gas Staffs was formed Nalgo could not speak for the whole of the gas staffs. The British Gas Staff Association claimed a membership of at least 12,000 company staffs, largely in the London area. When they formed the National Council for Gas Staffs they compromised with an allocation of 10 seats to the British Gas Staff Association, seven to Nalgo, three to the General and Municipal Workers, and one to the Transport and General Workers. There were claims from four other trade unions and they together were given one representative. That brought them to the position that the British Gas Staffs Association had 10 seats and the other organisations 12. They had now decided that in future the four trade unions who had a member between them at the present time should each have a member.

The Gas Engineers' National Guild

There would be added to the staff side of the National Joint Council representatives of the Gas Engineers' National Guild. This arose out of the problem of managerial and senior grades—a problem which had confronted them also in the electricity field. When they were dealing with a nationalised service obviously they had not their local authority representatives to draw upon and the employers' side had to be manned with employees at a higher level in that particular service. So they found early on in the electricity supply industry the argument from the management that it was improper that they should have people sitting on the employers' side who sat also on the employees' side of the machine. An attempt to form a separate machine with representatives confined to one body of employees only had not been accepted.

The Gas Council was anxious to establish a separate negotiating machine for everybody whose salary exceeded £700 or £750; they on the staff side said the figure should be much higher. The Gas Council had accepted apparently the position that apart from the Gas Engineers' National Guild the British Gas Staff Association and Nalgo should be represented on the National Joint Council for managerial grades. They had discussed the matter in the staff side of the National Joint Council and the staff side had approved the proposal in principle and had left them to negotiate with the Gas Engineers' National Guild and the Gas Council on the arrangements to be made in that field.

One or two representatives of the Gas Engineers' National Guild should be added to the staff side. The number of representatives that the Guild finally sent to the National Council must inevitably depend largely just on where the negotiating line was drawn. Similarly the representation of Nalgo on the body for managerial grades would depend on where the line was drawn.

Mr. Davis went on to say that they were confronted with a problem of the line at the bottom end, the question whether a man was an officer or a servant. The staff side had had discussions with the Joint Industrial Council for Manual Workers to see if they could not hammer out an agreement. The view of the Gas Council was that there should be a special joint body representative of the manual workers' and non-manual workers' joint councils to deal with this section of employees.

'My own view,' said Mr. Davis, 'is that the scheme that the Gas Council has propounded is likely to be the happiest solution of a problem that has given great concern in the electricity field.' They had as a staff side been concerned with co-partnership. In short, the intention was not to interfere at all with the co-partnership position but roughly to preserve it at any rate until 1951.

Mr. **L. A. Garratt,** newly appointed Organising Officer for gas staffs, said he had been in the gas industry for over 22 years and a member of Nalgo since 1936, and knew the problems of the gas officer from the officer's point of view. At the moment they were at the beginning of a new era in the gas industry. The industry had been chosen for an experiment in nationalisation inasmuch as it was decentralised more than any other nationalised industry. The area Boards were completely autonomous and the Gas Council was in a directive and advisory capacity. The gas industry had believed in regional agreements. That was why in the past 18 months they had had to negotiate separate agreements in each region. It might well be in the future they would have to accept a separate agreement for each area.

Staffs Who Never Strike

Developments in trade union machinery for the employees of local authorities, the National Health Service, the recently nationalised electricity and gas industries, and road transport are recorded in the annual report. Originally established for the clerical, administrative, professional, and technical staffs of local authorities, the Association later widened its constitution to enable it to cater for the parallel staffs of other statutory undertakings, and has since recruited many thousands of the employees of the newly-nationalised services and of those which are faced with nationalisation. As a result, with a membership of more than 175,000, Nalgo is today the biggest trade union of black-coated workers in the world.

In addition to the local government National Joint Council—on which it holds 23 out of 30 staff side seats—Nalgo has played a part in establishing similar machinery for the electricity, gas, and national health services. Its general secretary, J. H. Warren, is now Chairman of the electricity National Joint Council (administrative and clerical grades), in which it has helped to negotiate an interim scale of salaries, and is now negotiating permanent scales. Its chief organisation officer, J. E. N. Davis, is staff side Secretary of the National Joint Council for Gas Staffs, in which it has helped to negotiate basic salary scales for the former 'company' staffs.

The Black Coated Workers

Mr. **P. H. Harrold,** Town Clerk of Hampstead, in the course of his Presidential Address, said no one could deny that the blackcoated worker had fared worse in recent years than had many other groups of workers in the struggle to make ends meet. Nor could it be denied—though it was too often unrecognised—that the blackcoated worker in the municipal and public utility service made a contribution to the nation's life as vital as that of any other section. Local government officers had a special responsibility to the community and to the nation; to the community that in no circumstances should the vital services which they performed be interrupted, and to the nation that they should not prejudice the economic stability by action running counter to the principles set forth in the famous White Paper of February, 1948.

He took pride in the fact that in the whole of their recorded history—and certainly during the whole of the time Nalgo had led their economic struggle—local government officers had never declared a strike. Some might regard that as a sign of weakness. For himself, he regarded it as a sign of strength—the strength to put the welfare of the community first, the strength to believe that, in the long run, reason would win rather than force. Nor did their recognition of their responsibility mean that they must be content with things as they were leaving grievances unanswered injustices unremedied. In respect of salaries, the most burning topic before them today, he considered that they were fully entitled to press for the full implementation of the scales laid down in the salaries schemes to which they were a party without in any way infringing the principles of the White Paper. De-

claring that many local authorities had failed to grade their officers at the salary levels to which the quality of their work entitled them, Mr. Harrold warned that this policy, if it continued, must have a devastating effect on recruitment into the service.

'We have heard recently,' he continued, 'about the alarming exodus of local government officers from the service to higher paid posts outside it, and of the difficulty experienced by local authorities in replacing them with officers of equivalent skill and training. This has disturbed, and rightly disturbed, the local authorities, the more progressive of whom recognise that underpaid and possibly inferior administrators and technicians are no asset to the community, but a liability, and that, in the long run, cheap labour is the most expensive labour.' Membership of Nalgo Mr. Harrold pointed out, had increased by 50,000 in the past five years, making it, with nearly 180,000 members, the biggest trade union of blackcoated workers in the world. That increase was largely due to the great influx into membership of the staffs of the nationalised electricity, gas, and hospital services, and of the transport and water companies which were now facing nationalisation.

'We still call ourselves the National Association of Local Government Officers, but we are today much more than that,' he added. 'We are a great and still growing association of workers in innumerable fields of activity, united by the two bonds of common public service and common aims and outlook. Those of us who have spent our lives in local government warmly welcome our new colleagues who have joined us from outside. They bring to us a fresh outlook upon our problems which must be of benefit to us, just as we bring to them the fruits of our long and sometimes hard experience.'

GERMAN GAS AND WATER ENGINEERS

The German Association of Gas and Water Engineers (Deutsche Verein von Gas—und Wasserfachmänner) held its annual meeting at Frankfort on May 19 and 20. The meeting was attended by over 1,000 members and guests. This year is the anniversary of the founding of the Association at Frankfort, 90 years ago, and there were special celebrations. The Association was suspended in 1945 but was re-established in 1946 with the sanction and approval of the military Government.

The opening ceremony was held in Paulskirche, Herr Gils, Chairman, opening the proceedings. He welcomed the participants, including members and guests from Austria, Belgium, England, France, Holland, and Italy, and representatives of the military Government.

Speeches were made by Dr. Kolb, Oberbürgermeister, Frankfort/Main; Dr. Koch, Staatsminister, Hessen; Her Lohmann, Ministerialrat, VfW Frankfort/Main; Dr. Kaun, General Director, AGW Stuttgart; Dr. Bausch, Director, Berlin Gasworks; Professor Wagner, Verband der technisch-wissenschaftlichen Vereine; Herr Stoll, Chairman, Austrian Association of Gas and Water Engineers; and Herr Goebel, Director, Association of firms in the Gas and Water Industry.

A warm welcome was given to Dr. Bausch in acknowledgment of his position in Berlin, where gas supplies have been maintained despite the blockade. His brief account was punctuated with applause as he described the general situation there and the success achieved by the air-lift in bringing in supplies of gas coal.

The opening ceremony concluded with papers by Dr. Stief, Hamburg, on 'Ninety Years of the DVGW,' and by Dr. Gummert, Essen, on 'The Rôle of Energy in Human Activity.' In the meetings which followed, gas topics dealt with were 'Processes of Coal Treatment with reference to Gas Supply,' by Dr. Plenz, Stolberg; 'Problems of Gas Load Distribution,' by Dr. Segelken, Düsseldorf; 'Possibilities and Limits in the Development of Household, Commercial and Industrial Gas Supplies,' by Dr. Attig, Minden; and 'Gas Appliances, Today and Tomorrow,' by Director Klemp, Remscheid. All the speakers emphasised that coal itself is not a fuel but a raw material, which can best be used through the process of carbonisation.

Visits were made to: East Gasworks, Frankfort/Main; MAN works, Gustavsburg; and Ruhrgas High Pressure Holder Station, Niederursel. The East Gasworks was badly damaged during the war, but is now almost completely restored. The carbonising plant consists of 30 Otto twin-flue compound ovens with a daily throughput of 450 tons of coal. It will be necessary to extend this works in the immediate future as the neighbouring West Works was completely destroyed and is beyond repair.

At the MAN works visitors were able to see constructional work in progress, including the pressing of plates for MAN piston-type holders. The high pressure holder station at Niederursel is particularly interesting owing to the high storage pressure and the fact that the storage cylinders are underground.

Parallel with the gas meetings the water engineers held a series of meetings and visits to local water projects of interest. The meetings concluded with a reunion at the Kurhaus, Bad Vilbel.

KEY TO PRODUCTION DEPARTMENTS

An article in the *Board of Trade Journal* on Jan. 15 gave details of the organisation of the Commercial Relations and Exports Departments of the Board of Trade, following the amalgamation of the former Commercial Relations and Treaties and the Export Promotion Departments. Manufacturers and others were advised that whereas general questions of export policy should normally be addressed to that Department, matters affecting production and controls and export targets for particular industries, as opposed to the target for a particular country, should still be referred to the appropriate production department, whether in the Board of Trade or another Ministry.

To assist those who wish to approach production departments a list of the main departments together with the commodities for which they are responsible was set out in the *Board of Trade Journal* of June 4. Items which concern the gas industry were listed as follows:

Admiralty.—Chain, chain cable and shackles, except precision chain which is the responsibility of the Ministry of Supply, optical glass, salvage equipment.

Board of Trade.—Asbestos, except asbestos-cement products which are the responsibility of the Ministry of Works, chemicals (industrial); clothing, including footwear, furs, gloves, headgear and hosiery. Cordage, ropes and twines. Gas mantles. Glassware, domestic and illuminating. Hollow-ware and kitchen hardware, ornamental brassware, brooms, brushes and domestic mops, oil lamps and lanterns, lighting fittings (domestic commercial and industrial). Iron and steel, finished, *for export*, including sheets, plates, tubes and fittings, wire and sections, re-rolled products, rails, sleepers, points and crossings, mill forgings and special steels. Leather and leather goods, including belting; tanning materials. Metal goods, miscellaneous, small. Netting, knotted, and netting production. Paints, varnishes and solvents.

Ministry of Works.—Asphalt and similar continuous flooring, and roofing felt. Asphalt tiles, cork and rubber flooring. Bricks, salt glazed pipes, slates, tiles, plate and sheet glass. Cement, asbestos-cement products, plaster, plaster-board, whiting and putty. Concrete products. Gas cookers, water heaters, fires, &c. Metal doors and windows. Plumbers' brassfoundry. Baths, tanks (hot and cold water). Sand and gravel. Solid fuel combustion appliances and radiators.

Ministry of Health.—X-ray apparatus, equipment and accessories (industrial).

Ministry of Supply.—Air-conditioning plant. Bakery plant. Ball and roller bearings. Belting, other than leather belting which is the responsibility of the Board of Trade. Canteen and hotel kitchen equipment. Chemical plant. Civil engineering plant, e.g., earthmoving equipment, excavators, quarry crushing and screening plant, road surfacing plant. Clocks, watches, time switches and recorders. Constructional steel. Conveyors. Cranes. Fans (mechanical). Foundry plant. Ferro-alloys. Fire-fighting equipment (except hose which is the responsibility of the Ministry of Works). Furnace plant. Gasworks plant. Gears, transmission. Hand tools. Jointing and gland packing materials. Kegs, drums and sheet steel containers. Laboratory equipment and scientific glassware. Lifts. Locomotives, carriages and wagons; railway and tramway equipment (except rails, sleepers, points and crossings which are the responsibility of the Board of Trade). Machine tools. Measuring, testing and weighing instruments and machines. Non-ferrous metals. Office machinery, including typewriters. Pumps, including centrifugal pumps. Road vehicles: cars, commercial vehicles and trailers. Refractories. Refrigerators. Rotating electrical machinery, *e.g.*, alternators, generators. Scientific instruments. Steam-raising plant. Tanks, industrial. Trucks, industrial. Turbines. Unit heaters. Weighing machines.

Ministry of Fuel and Power.—Coal, coke, and manufactured solid fuel. Products of the carbonisation of coal, including pitch, tar, &c. Petroleum products, including crude oil, aviation spirit, motor spirit, white spirit and special boiling point spirits, kerosene, gas, diesel and fuel oils, lubricating oils, white oils (including liquid paraffin), petroleum jellies, waxes (other than vegetable waxes), candles, bitumen, petroleum coke, petroleum derivatives and liquefied petroleum gases.

Mr. C. G. S. Rolls, Technical Service Representative of Radiation, Ltd., gave an address to the Women's Gas Council, Coventry Branch, on June 16, on the subject of the evolution of gas appliance design.

To Meet the Demand for gas at the Royal Highland and Agricultural Show, which opened on June 21, the Dundee undertaking laid three-quarters of a mile of 6 in. main to the extreme end of the showground. Two 4 in. pipes were fed from this to service cooking and hot water appliances, and altogether over a mile and a half of service piping was laid. Gas appliances were used on 42 stands, and 63 cookers, 31 gas rings, and 106 boilers, in addition to hot plates and tea urns, were installed.

SYMPOSIUM OF SHORT PAPERS*

(*Continued from p. 739*)

AUTOMATIC WARNING OF CHANGES IN GAS QUALITY

By E. WEARNE (Newcastle)

IN view of the unavoidable variation in gas quality caused by the exigencies of the present time, the following notes on a warning device designed by the Newcastle-upon-Tyne undertaking.

Where any network or grid system of gas supply exists feeding an area subject to considerable variation in load, and where different methods of gas manufacture are practised in the various works, it is evident that changes in gas quality must occur. Any increases in percentages of carburetted water gas and diluents usually lead to an increase in specific gravity, a lowering of the A.T.B. figure, and, at times, a lowering of calorific value, the total effect of these changes being a tendency to backfiring of aerated burners, especially of the more sensitive type such as are used in street lighting.

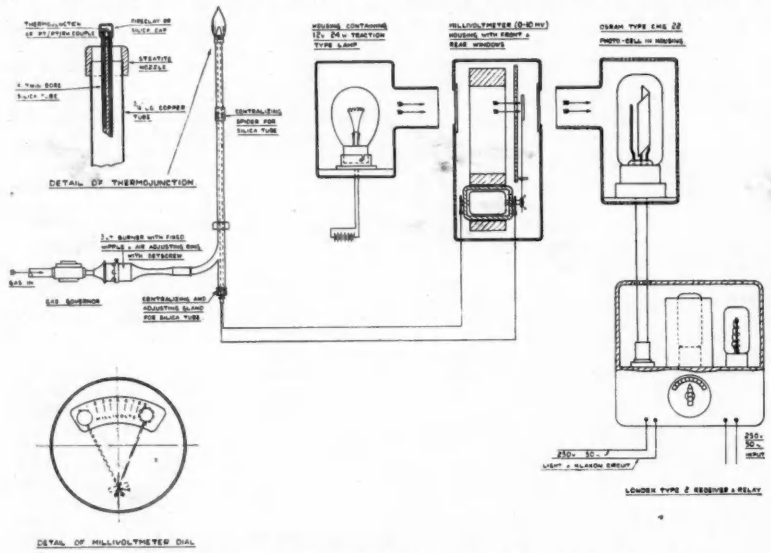


Fig. 1. — Apparatus for giving automatic warning of changes in gas quality.

In order, therefore, that the exhauster house control engineer may be advised of such a change in the gas and may be able to effect a remedy before it can reach the district in quantity sufficient to cause trouble, the apparatus illustrated in Fig. 1 has been developed to give rapid, audible, visible, and if need be recorded warning of the change of quality on the inlet to holders' gas stream. In this apparatus a thermocouple, which is normally placed in the blue (cold) zone of a bunsen flame, is rapidly heated to a high temperature when the flame shortens, a circumstance which precedes back firing. The e.m.f. generated is utilised to operate a photo-electric cell circuit, closing or opening power contacts as required.

The gas is fed in via a constant pressure gas governor set at 25/10 in. w.g. to a 3-light injector with fixed nipple and standard venturi tube, which in turn is connected to the side arm of a ¾ in. B.S.P. swept tee. The upper arm of this tee is bushed to receive a ¾ in. B.S. light-gauge copper tube 24 in. long, which is divided into two lengths by means of a Yorkshire socket. Passing through this tube is a ¼ in. diameter silica tube with twin bores, centralised by means of a gland in the lower arm of the tee and a light streamlined spider at the mid-junction of the copper tube. Through the twin bores are threaded the elements of a platinum and platinum rhodium thermocouple which has its thermojunction set so that it is normally within the blue cone of the flame. This thermojunction must be covered with a thin-walled silica or fire-clay sheath to prevent the catalytic ignition of gas in the blue cone by the bare platinum wire. To reduce the cost a short length only of the rare metal is used, a brazed joint to suitable compensating lead being made.

A galvanometer having a full scale deflection of 10 millivolts (corresponding to about 1,050°C. with a platinum and platinum-rhodium thermocouple) is connected to the lead wires from the couple. The following modifications to the instrument are provided:

(1) A positive stop is fitted at the 10 mV position.

(2) A hole, ¼ in. diameter, is drilled through the rear case and the scale plate close in front of the stop so that a beam of light from an external source may pass through the instrument from back to front. This hole is covered at the rear by a glass window to prevent the access of dust and to give protection to the movement.

(3) A 'flag' of Alfol, ¼ in. in diameter, is cemented to the galvanometer pointer in such a position that the above-mentioned beam of light is interrupted when the pointer is moved fully across the stop. Naturally, careful rebalancing of the pointer system is required, but the arrangement of balance weights usually provided on a galvanometer is adequate to take care of the additional load of the flag.

The light source referred to is in this case a 12 volt 24 watt car type headlamp bulb with a line filament fed by a transformer from the a.c. mains. Placed a few inches in front of the galvanometer and separated therefrom by an internally polished stainless steel tube, which serves to cut out extraneous light, is a G.E.C. type CMN 22 photo-electric cell. The galvanometer, light unit and photocell are enclosed in a ventilated dustproof case to eliminate the troubles which would occur by reason of the clouding over of any of the glass surfaces separating the light source from the photocell cathode. The current from the photocell is fed to a suitable amplifier or gas-filled valve relay circuit capable of closing the warning light and horn circuit when operated. It will be appreciated that the warning circuit is open when the light beam is free to pass, and warning is given should the light beam be interrupted by any means, *i.e.*, either by the intervention of the flag or by the burning out of the 12-volt bulb. Incidentally, it has been found that both the bulb and the photo-electric cell are capable of giving at least 1,500 hours' service.

TABLE 1

	A.T.B. Figure.	
3.38 p.m.	60	Indicator lamp relay OFF. Oil cut off from w.g. plant for 2 full cycles.
3.42 p.m.	60	Indicator lamp relay OFF.
3.45 p.m.	58	Indicator lamp relay OFF.
3.47 p.m.	53	Indicator lamp relay OFF.
3.48 p.m.	49	Indicator lamp relay ON. C.W.G. booster speed reduced, oiling restored.
3.50 p.m.	48	Indicator lamp relay ON.
3.53 p.m.	52	Indicator lamp relay OFF.

Since the original assembly of the apparatus, an alternative to the photo-electric cell arrangement has become available, and work is now proceeding on the substitution of a Western Sangamo moving coil relay operated by the thermocouple current to control the lamp and klaxon indirectly through a Post Office type re-

*Presented at the Annual Meeting of the Institution of Gas Engineers, June 14, 1949.

lay. Certain electrical difficulties present themselves, but the final arrangement should be more simple and robust, and require less maintenance.

As at present set up, the instrument gives warning by a 60-watt red bulb and a 12 volt klaxon (fed from a transformer) with an overriding manual switch on the klaxon, since it is obviously undesirable to give continuous audible warning for the whole period of time which is required to correct the trouble which originated the warning.

Table 1 (p. 784) is typical of the time lag required for warning and correction following upon the supply of a volume of low-quality water gas. The main mixture was about 67% coal gas (horizontal retorts) and 33% carburetted water gas.

During this test the apparatus was set to give warning with a drop of about 10 units on the A.T.B. ('A'' scale), but by manipulation of the couple position in respect of the cone, and by adjusting the primary air shutter setting, almost any range from 6 units fall may be indicated.

During the autumn of last year considerable alterations to plant and mains were made on the works concerned and several warnings were given, allowing full correction of gas quality without the receipt of a single complaint from the district, thus proving its value and reliability under normal working conditions.

These notes are read on behalf of Mr. J. W. Pringle, Chief Technical Officer (Utilisation), who devised and constructed the apparatus described.

SERVICE WITH SIMPLICITY

We illustrate the Thermain No. 15 gas water heater marketed by R. & A. Main, Ltd. This appliance is designed to provide a full hot-water supply system for

the whole of the average dwelling or flat at the first cost, both of the appliance and of the necessary water and gas supply piping, and subsequent low maintenance costs. The appliance itself consists of a 15 gal. container on which is mounted a ball-valve fed tank. The container itself does not therefore have to be strengthened to stand high water pressure. The heater is mounted above the highest draw-off point, the bathroom being often the most convenient place. Hot water is then supplied by gravity. Such an installation has been found to show a worthwhile saving in cost on that of even the cheapest solid fuel system with its 'back boiler' storage and piping.

The appliance is provided with a burner having a rating of 10,000 B.Th.U./hr. (20 cu. ft. of 500 B.Th.U. gas) and the heating-up is controlled by a thermostat which, while specially designed to prevent gradual reduction of the flame and thus a prolonged heating-up period, is not of the snap action type. It allows full gas to burn until the maintenance temperature is nearly reached and only then does it close sufficiently to control the flow of gas. The application of this delayed control to the relatively low input rate results in comparatively rapid heating-up (about two hours from cold), and, after withdrawal of hot water, recovery at the rate of 8⅓ gal. per hour raised through 90°F.

Performance data are as follows:

Consumption: Full on, 10,000 B.Th.U. per hr. (20 cu. ft. at 500 B.Th.U.).

Maintenance: About 750/1,000 B.Th.U. per hr. (1½ cu. ft. at 500 B.Th.U.).

Heating up: About 2 hours.

Recovery rate: 8⅓ gal. per hour raised 90°F.

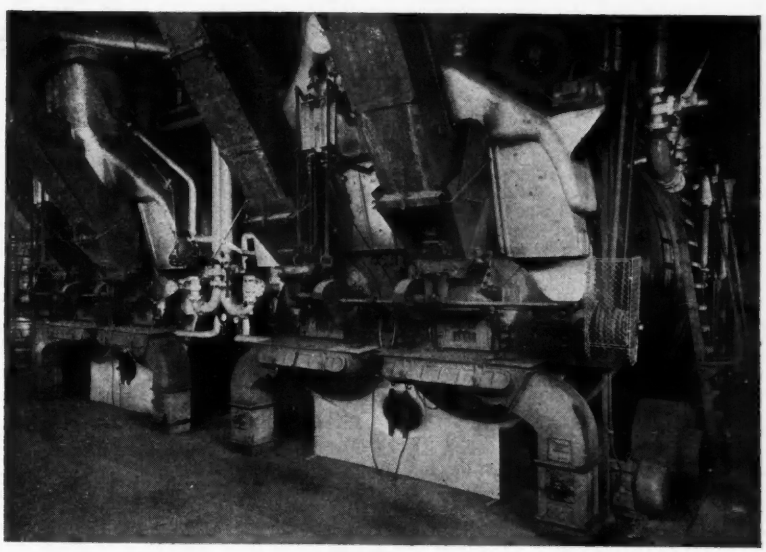
Mean temperature of water drawn off: 15 gal. at 134°F. (with cold supply at 56°F.).

Efficiency: 77.5%.

METERS AND FITTINGS

We have received from **Metropolitan Gas Meters, Ltd.,** Hyson Green, Nottingham, a catalogue, *Meters and Fittings*, which has been issued to commemorate the gas industry's nationalisation, the quincentenary of the granting of the charter to Nottingham, and the election of one of the Company's employees, Alderman W. Sharp, as Lord Mayor of Nottingham. The object of the booklet, as outlined in a foreword, is to illustrate the Company's various products rather than to deal with technicalities, and to provide the reader with useful information and an insight into the Company's works. For this reason the publication is more than a catalogue; in addition to a comprehensive list of meters, meter parts, and other products, it contains a section of interior views of the works, conversion tables, B.S.I. dimensions for gas meter unions, and other technical data. It has been produced in loose-leaf form and in a useful pocket size.

A NEW BOILER INSTALLATION



Our photograph shows two Paxman self-contained Economic boilers, recently installed at the Tunbridge Wells gasworks. The fuel used is coke breeze. Measuring 11 ft. 6 in. diameter by 16 ft. long, they are fitted with 'Turbine' forced draught furnaces and 'Proctor' stokers, 'Clyde' soot blowers, 'Reiss' dust extractors, and induced draught fan. Pond water, treated in a 'Permutit' hot lime plant, is used. Figures available for the four weeks ending Mar. 25 with both boilers at work show that 6,486,400 lb. of steam were raised at an estimated pressure of 105 lb./sq. in. Evaporation was 6.33 lb. steam/lb. fuel on wet basis, and a total consumption of 477 lb. of fuel was recorded. Grading figures were as follows: 0-¼ in., 24%; ¼ in.-¼in., 20%; ¼ in.-½ in., 22%; and over ½ in., 34%. Approximately 4,830 lb. steam/hr. were raised by each boiler, a low figure since both boilers were not worked on full load together.

IMPERIAL CONTINENTAL GAS ASSOCIATION

Details of the operations of companies in which the Association is interested are included in the annual report of the Imperial Continental Gas Association, whose financial results have already been reported in the *Journal* (June 1, p. 498). The report states that negotiations are still proceeding with the French Government in regard to the basis of compensation for the expropriation of the Association's properties under the Nationalisation Law of April 8, 1946. It is expected that agreement will soon be reached. In addition to the interest already acquired in Ewart & Son, Ltd., the Association has acquired a majority shareholding in James Stott & Co. (Engineers), Ltd.

The profit available for dividend for the year ended Dec. 31, 1948, from the Antwerp undertaking, including a profit on a sale of land, amounted to Frs. 20,000,000, after providing Frs. 21,955,363 for depreciation and Frs. 1,067,000 for legal reserve. The dividend for 1948 was at the rate of Frs. 62.50 per share against Frs. 62.725 for the previous year. The consumption of gas during 1948 in the Antwerp area of supply increased by 5.94%. The number of consumers increased by 4,639. New mains were laid to the extent of 11,051 metres (6.9 miles).

After providing Frs. 10,476,771 for depreciation and transferring Frs. 1,528,000 to legal reserve, the profit distributed as dividend for the year ended Dec. 31, 1948, in respect of the Brussels undertaking, amounted to Frs. 26,895,000. This sum permitted the payment of a dividend for 1948 at the rate of Frs. 55 per share, compared with Frs. 52.50 for the previous year. Sales of gas increased by 2.12%, while electricity sales fell by 0.57%. The number of consumers increased by 1,935 for gas and by 1,021 for electricity. New gas mains and electricity cables were laid for lengths of 2,274 metres (1.4 miles) and 3,913 (2.4 miles).

The Provinciale undertaking paid a dividend for 1948 at the rate of Frs. 45 per share, compared with Frs. 39.38 for the previous year. The dividend required Frs. 27,360,000, after providing Frs. 34,714,142 for depreciation and allocating Frs. 1,549,000 to legal reserve. Sales of gas increased by 1.06%, while electricity sales fell by 1.83%. The number of consumers increased by 4,194 for gas and by 1,701 for electricity. New gas mains and electricity cables were laid for lengths of 62,987 metres (39.1 miles) and 31,332 metres (19.5 miles). Work on the erection of the 3,500,000 cu.ft. gasholder at Woluwe-Saint Lambert continued, while the new gasholder of 1,750,000 cu.ft. at Louvain was put into service. The gas supply was begun to the Communes of Court-Saint-Etienne and Céroux-Mousty (south-east of Brussels) for which the network had been installed in 1947. At Zaventem (north-east of Brussels) the conversion of the electricity network to alternating current was almost completed.

The Société de Distribution du Gaz (Distrigaz) distributed Frs. 17,142,857 as dividend for 1948 at the rate of Frs. 228.57 per share, compared with Frs. 191.42 for the previous year. Frs. 15,125,091 was allocated to depreciation and Frs. 966,512 to legal reserve.

The poor results of Les Cokeries du Brabant in the latter part of the year were counterbalanced to some extent by the better results at the beginning of the year with the result that, after providing Frs. 21,271,862 for depreciation, the loss for the year was limited to Frs. 575,822. Owing to the excessive price of Belgian coking coal compared with prices ruling in neighbouring countries, the Belgian coke oven undertakings cannot compete in the export coke market except at prices leaving a heavy loss. During the year the new battery of 39 coke-ovens and the remainder of the new battery of five gas producers were put into action.

After allocating Frs. 3,366,724 to depreciation and legal reserve, the Société Chimique de Selzaete paid a dividend for the year to Dec. 31, 1948, at the rate of Frs. 25 per share, compared with Frs. 75 for the previous year. The total amount of the dividend was Frs. 1,601,250. The results were affected by a shortage of Belgian exchange in the hands of foreign buyers.

The Union Intercommunale des Centrales Electriques du Brabant (Interbrabant) paid a dividend for 1948 at the rate of Frs. 87.86 per capital share and Frs. 151.14 per ordinary share, compared with Frs. 73 and Frs. 124.63 respectively for the previous year. Frs. 65,309,196 was allocated to depreciation and Frs. 11,816,065 to legal and other reserves. Extensions in progress at the company's two power stations will provide additional installed capacity of 30,000 kilowatts at one power station and 90,000 kilowatts at the other. This additional capacity will be available in full in 1951. The first of four new boilers has been put into action. Completion of the remaining three is expected to take place during 1949. Negotiations have been successfully concluded for the supply of current in bulk to the Commune of Saint-Gilles, one of the inlying Brussels Communes.

After providing Frs. 2,300,033 for depreciation and Frs. 133,000 for legal reserve, the Compagnie Continentale d'Appareils de Mesure (Contimeter) paid a dividend for the year to Mar. 31, 1948, at the rate of Frs. 250 per share, compared with Frs. 235.29 for the previous year. The total amount of the dividend was Frs. 2,415,000. As a result of the continued development of the company's activities important extensions were put in hand with a view to increasing the productive capacity of the works.

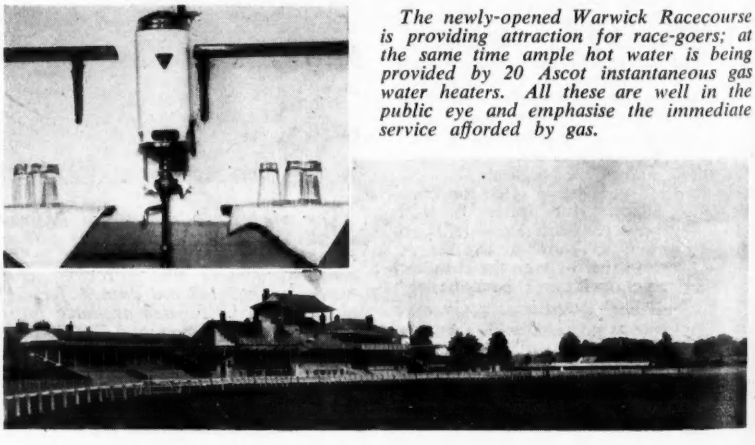
The turnover of Matériel et Appareillage pour le Gaz, l'Electricité et le Coke (Magec) showed a substantial increase during the year 1948, but the results continued to be adversely affected by rising costs and by expenses associated with the opening of new showrooms. After providing Frs. 936,194 for depreciation and legal reserve, the small remaining profit was carried forward to the following year.

During the year ended April 30, 1948, the consumption of gas in the area of supply of the Compagnie Nationale d'Eclairage decreased by 6.61%, whereas the consumption of electricity increased by 11.67%. The number of gas and electricity consumers showed an increase of 363. After setting aside Frs. 1,380,248 for depreciation and transferring Frs. 240,807 to extraordinary and legal reserves, the company earned a profit of Frs. 1,500,000. This sum permitted the payment of a dividend at the rate of Frs. 5 per Preferred share and Frs. 10 per Ordinary share against nil for the previous year.

After placing Frs. 18,498,178 to reserve, which included certain capital profits, the Compagnie Belge et Continentale de Gaz et d'Electricité (Contibel) paid a dividend at the rate of Frs. 37.50 per share for the year to Mar. 31, 1949, compared with Frs. 25 for the previous year. The total amount required for the dividend was Frs. 15,000,000. For the year ended Mar. 31, 1949, Belcomin made a profit of Frs. 1,944,079 which was carried to reserve.

Wellman Smith Owen of South Africa (Pty.), Ltd., subsidiary of the Wellman Smith Owen Engineering Corporation Ltd., has received an order for a complete set of coke oven machines for a battery of coke ovens which Simon Carves (Africa) (Pty.), Ltd., are constructing at the collieries of Vryheid Coronation, Ltd., Natal. The machines are the first of their kind to be manufactured in South Africa and will be made to the design of the Wellman Smith Owen Engineering Corporation, Ltd., London and Darlaston, who have installed similar machines in many parts of the world. They will consist of coke pushers, coal charging larries, door extractors and coke guides, and the work of manufacture will be undertaken by Vanderbijl Engineering Corporation, Ltd., at Vanderbijl Park, with whom the Wellman Company has manufacturing facilities. In all, there are approximately 375 tons of machinery, consisting of mechanical, structural and electrical gear.

HOT WATER FOR RACE-GOERS



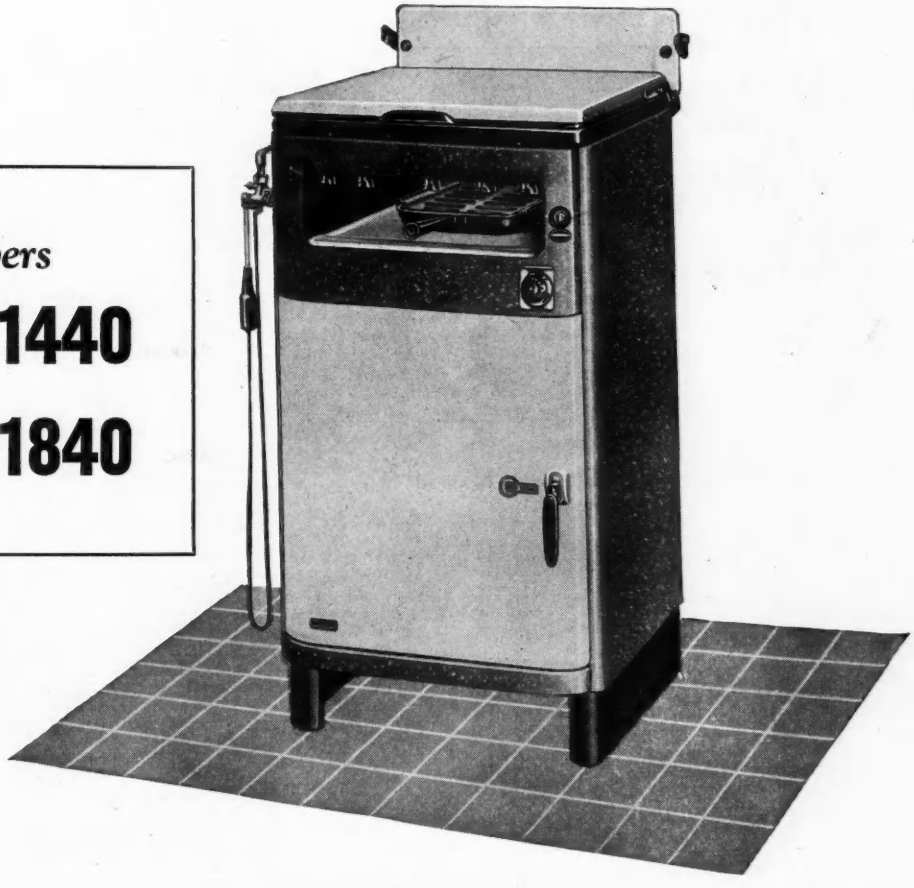
The newly-opened Warwick Racecourse is providing attraction for race-goers; at the same time ample hot water is being provided by 20 Ascot instantaneous gas water heaters. All these are well in the public eye and emphasise the immediate service afforded by gas.

-superb cooking

Numbers

1430 1440

1640 1840



The Hotplates of the Nos. 1440, 1640 and 1840 Cookers each contain four boiling burners; the No. 1430 has three boiling rings. All models have a large, high-efficiency grill and removable pan supports.

GAS COOKERS

Radiation Ltd

Radiation House, Aston, Birmingham, 6. Showrooms & London Offices: 7 & 8 Stratford Place, W.1 (Telephone: Mayfair 6462)

NEW WORLD NEW WORLD NEW WORLD

T.33

GAS STOCKS AND SHARES

During the two months which have elapsed since the nationalisation of the gas industry some or all of the securities of 110 of the 630 companies vested under the Gas Act have been valued and British Gas 3% Guaranteed stock, 1990-95, issued to shareholders in their place. Of the 71 major undertakings whose shares were quoted each month in the *Journal* prior to May 1, the securities of 38, in part or in toto, remain unvalued, and dealings in these have therefore continued since vesting day. They are, however, 'ex dividend' and free from stamp duty on transfer prices, and prices of these stocks were raised accordingly last month. We publish below a complete list of quotations for these unvalued securities on the London Stock Exchange of June 23. It will be noted from the 'rise or fall' list that the prices of the majority of stocks have risen, in some cases substantially, since the last published list in the *Journal* of April 27. In addition, there is included a separate list of quotations of those securities which remain unaffected by the Gas Act by reason of their being commercial undertakings specifically excluded from the Act, former gas and water undertakings, of which only the gas interests have been nationalised, or foreign or colonial companies. Dealings in these stocks have remained fairly brisk over the two months, the daily average of transactions for the week ending June 24 in unvalued securities being 28, and 12 for those outside the terms of the Gas Act, which carry dividend.

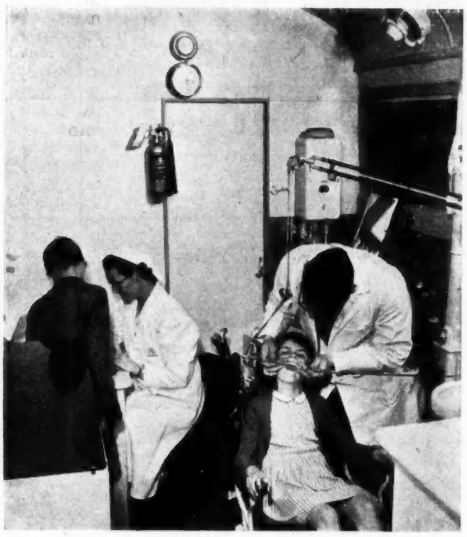
Quotations on the London Stock Exchange

NAME	Quotations June 23	Rise + or Fall −
Alliance & Dublin Cons. Ord.	22–/—24–/	+–/6
Barnet Ord. 7 p.c. max.	144—149	−7
Bombay, Ltd., Stock	34/—39/–	
Bournemouth Std. 5 p.c. sliding scale	155—160	−5
Do. 7 p.c. max. div.	147—152	−3
Do. 4 p.c. Pref.	95—100	−1
Do. 6 p.c. Pref.	123—128	−1
Do. 3½ p.c. Red. Deb.	95—100	
Do. Perp. 4 p.c. Deb.	97—102	+1
Cape Town, Ltd., 4½ p.c. Cum. Pref.	17/—19/–xd	
Colombo, Ltd., Ord.	27/—32/–	
Do. 7 p.c. Pref.	22/—24/–	
Colonial Gas Association, Ltd., Ord.	14/—16/–xd	
Do. 8 p.c. Pref.	22/—25/–xd	
Hartlepool Gas and Water 5 p.c. Ord.	93—98	
Imperial Continental Cap.	95—100	−10
Malta & Mediterranean Ord.	160—170	
Do. 7 p.c. 1st Pref.	110—115	
Do. 7½ p.c. 2nd Pref.	110—115	
M.S. Utility 'A' Cons.	120—125	+17
Do. 'C' Cons.	120—125	+18
Do. 4 p.c. Cons. pref.	98—103	+2
Montevideo, Ltd., Ord.	80—90	−10
Primitiva Holdings, Ltd., Ord.	9/—11/–	+1/–
Do. 6½ p.c. Red. Cum. Pref.	96—101	−1

GAS ACT, 1948
Part II of 2nd Schedule, 'Unvalued Securities'
FREE OF STAMP DUTY

NAME	Quotations June 23	Rise + or Fall −
Bath Cons. Ord. 5 p.c. basic	108—113	
Brighton, &c., 5 p.c. Std. Cons.	116—121	+11
Do. 6 p.c. Std. Cons.	126—131	+11
British Gas Light Ord.	129—134	
Do. 5½ p.c. 'B' Cum. Pref.	110—115	−3
Cheltenham 4 p.c. Perp. Deb.	98—103	
Chester United Ord.	112—117	
Commercial Ord.	94—99	+2
Croydon sliding scale	123—128	+1
Do. max div.	103—108	−2
Do. 4 p.c. Irred. Pref.	98—103	
Derby 4 p.c. Red. Deb.	97—102	
East Hull Ord.	100—105	+2
East Surrey 'B' 5 p.c.	101—106	
Do. 6 p.c. Cum. Pref.	119—124	
East Wight Cons. Ord.	112—117	+2
Eastbourne 'A'	113—118	+7
Do. 'B'	112—117	+9
Gas Light & Coke Ord.	23/—24/–	—/7½
Do. 3½ p.c. max.	78—83	+1
Do. 4 p.c. Con. Pref.	98—103	+1
Do. 3½ p.c. Red. Pref.	98—103	+1
Gloucester Cons. Ord.	95—100	
Great Yarmouth 8½ p.c. max.	17/—19/–	+3/6
Guildford Cons. Ord.	135—140	
Hampton Court 5 p.c. Cons. Ord.	98—103	
Hastings & St. Leonards 5 p.c. Std.	104—109	
Do. 3½ p.c. Std.	95—100	+5
Holyhead & North Wales Ord.	21/—23/–	
Hornsey 3½ p.c. Std.	92—97	
Do. 5 p.c. Std.	113—118	
Lea Bridge Co. Cons. Ord.	137—142	
Newport (Mon.) Cons.	99—104	
North Middlesex 6 p.c.	128—133	+2
Do. 5 p.c. Pref.	108—113	
Northampton Cons.	107—112	+1
Oxford Cons. Ord.	205—215	−3
Plymouth & Stonehouse Ord.	117—122	+5
Do. Addl.	17½—19½	+3
Do. New	17—19	+4
Do. 5 p.c. Deb. Perp.	122—127	
Portsmouth & Gosport Cons.	153—158	+4
Do. 5 p.c. max.	105—110	
Romford Ord.	113—118	
South Eastern Gas, Ltd., Ord.	23/—24/–	+–/3
Do. 4½ p.c. Red. Cum. Pref.	21/3—22/3	—/3
Do. 4 p.c. Irred. Cum. Pref.	19/9—20/9	
South Metropolitan Ord.	107—111	+3
Do. 6 p.c. Irred. Pref.	127—132	+1
South Metropolitan 4 p.c. Irred. Pref.	98—103	
South Suburban Ord. 5 p.c.	115—120	
Do. 5 p.c. Perp. Pref.	110—115	
Do. 4 p.c. Perp. Pref.	97—102	
Do. 3¾ p.c. Red. Pref.	93—98	
Southampton Ord	105—110	+1
Sunderland Ord.	118—123	+1
Swansea Ord.	86—91	+1
Swindon Cons. Ord.	116—121	
Uxbridge, &c., 5 p.c. Cap.	123—128	
Do. 5 p.c. Pref.	110—115	
Weymouth Ord. (5 p.c. Basic)	93—98	
York Cons. Ord.	102—107	

MOBILE DENTAL CLINIC



A dental clinic on wheels, designed by Mr. F. J. Saunders, Kent County's Senior Dental Officer, has been fitted with a Ewart M.75 sink geyser fed by a Calor gas outfit. This mobile clinic will visit the rural areas of Kent. The illustration shows the first patient being treated.

The Telephone Number of the headquarters of the Northern Division, Southern Gas Board, and of the Oxford and District undertaking is now Oxford 48001.

Sixty Lady Members of the North Cheshire Home Service Guild visited the works of General Gas Appliances, Ltd., Audenshaw, Manchester, on June 21, and saw the complete process of manufacturing and finishing gas cookers and fires. They were entertained to tea by the Directors. Miss P. Pearce, the North Cheshire Home Service Adviser, was in charge of the party.

PUBLICATIONS RECEIVED

The Yearbook of the British Standards Institution, which has just been published, gives a subject index and a synopsis of each of the 1,500 British Standards now current. It includes lists of members of the General Council, the Divisional Councils and the Industry Committee of the Institution as well as other useful information about its work.

The Yearbook, price 5s., post free, can be obtained from the Sales and Distribution Department, British Standards Institution, 24, Victoria Street, London, S.W.1. A subject index of the list of British Standards may be obtained separately at the published price of 1s. 6d.

* * *

The British Iron and Steel Federation has issued a new monthly bulletin, *Steel News*, designed to give information about the industry in a more simple and popular form to a wider public. The first number is attractively produced with photographs, charts, and a cartoon. Details are given of the latest record output figures, and there are articles on the erection of a new £60 mill. steel works in South Wales, the scrap metal drive, and the problem of increases in the cost of fuel and raw materials. At a time when the future of the steel industry is a centre of controversy this publication forms a useful addition to the wide range of information already made available by the Federation.

* * *

It is regrettable but inevitable that the leading personalities in industry should find little time and opportunity in which to record their experiences of the varied pattern and problems of business and commercial enterprise. All the more welcome, therefore, are the *Reflections and Reminiscences* of Sir Frederick J. West, G.B.E., Chairman of West's Gas Improvement Co., Ltd., which have been published by the Company in book form from articles in *West's Gas*, 1947-48. In 12 short chapters covering a variety of topics, we are given a vivid impression of a full life, enjoyed to the full, with all the many responsibilities and calls which are always made upon a man in such a position.

More than that, the pages reveal a sound philosophy of life, and there is much wisdom and thought to be found in those sections which deal with the relationship between management and worker experienced over a period of some 40 years. Of interest also are those pages which cover the history and development of the Institution of Gas Engineers, of which Sir Frederick was President in 1941-42. The book is more than an autobiography; behind its many personal references and anecdotes there can be traced the history and growth of a company which has benefited not least from having for so long at its head such an individual and human personality.

Learning at Every Step is the title of a colourful booklet published by the Miners' Welfare Commission describing the rehabilitation of miners suffering from injury in the pursuit of their work. The shortage of miners has clearly brought about a greater concern for their health and safety, as a partially disabled man is a weak link in the chain of coal production. The booklet presents interesting facts and figures regarding the progress made in rehabilitation and the special centres existing for the care of injured men, but suffers from over-ambitious design and muddled presentation.

* * *

The National Coal Board has published a booklet, entitled *Reorganising the Coal Industry*, which provides an interesting sample of development schemes now being carried out in the eight National Coal Board divisions. Some 22 colliery schemes are described, covering all the Divisions, which will ultimately involve a total expenditure of more than £29 mill.

Each scheme is outlined in non-technical language and illustrated by photographs and diagrams of excellent quality. There are also illustrations of some general types of development common to the majority of schemes, such as locomotive haulage, skip-winding, drift-mining, and boring. The Nantgarw coking plant, designed to manufacture blast furnace coke for use in South Wales iron and steel works, is included in the booklet, and a separate account is given of the Aberaman phurnacite plant for the manufacture of high grade smokeless fuel from the fines of the Welsh dry steam coal seams. Both these plants will supply the Eastern Wales gas grid, and it is stated that the Nantgarw works alone in its first stage will be capable of putting into the grid up to 77 mill. cu.ft. of gas per week.

* * *

British Jeffrey-Diamond, Ltd., 15/17, Caxton Street, London, S.W.1, give details of their 'Atomill' fine grinder in a comprehensive illustrated leaflet. Designed for the grinding of a wide variety of materials to fine powders in numerous industries and industrial processes, the 'Atomill' is a compact, self-contained, self-feeding machine with several novel features, not least being its attractive stream-lined cover which completely encloses all external moving parts. It consists of a casing, or grinding chamber, which encloses a high speed rotor driven through vee ropes by an electric motor mounted alongside on a common base plate. The machine is dustless in operation, easily accessible for cleaning, readily adaptable to site requirements either for periodic or flow production, and requires a minimum of attention and general maintenance.

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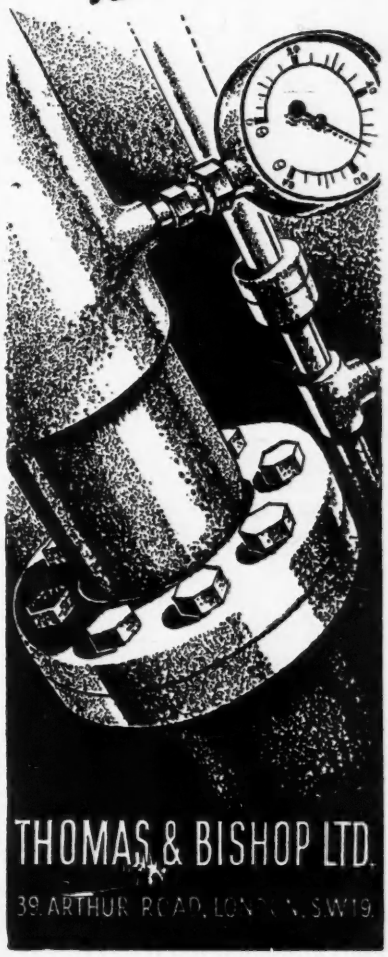

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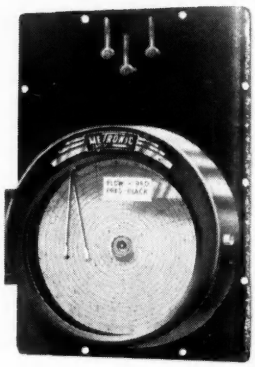

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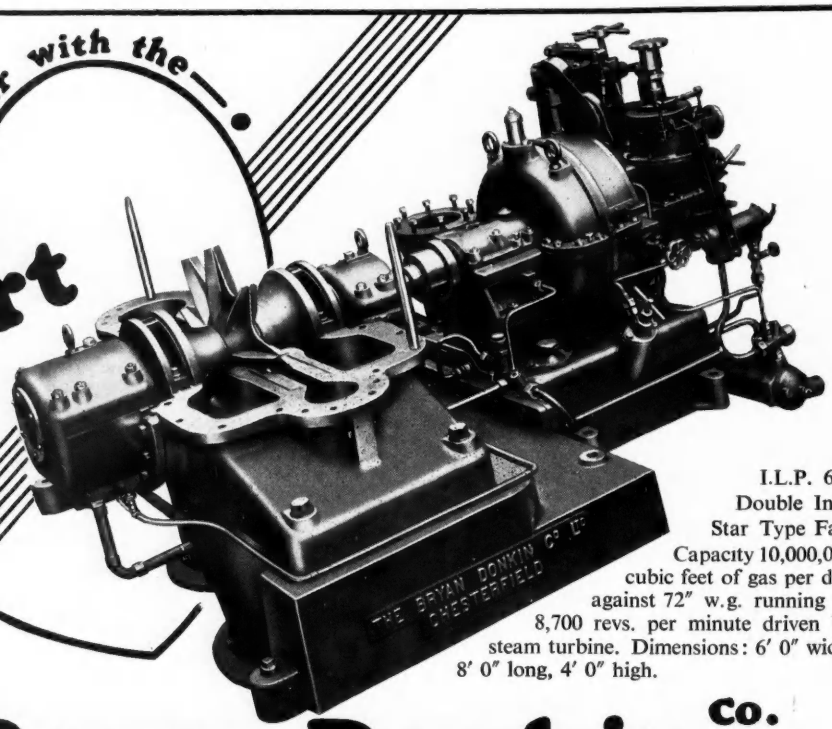

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